



R3 RESPONSE TO NATIONAL BANK AND FEDERAL SAVINGS ASSOCIATION DIGITAL ACITIVITIES PROPOSED RULEMAKING BY THE OFFICE OF THE COMPTROLLER OF THE CURRENCY

R3 appreciates the opportunity to respond to this advance notice of proposed rulemaking. We are delighted the Office of the Comptroller of the Currency (OCC) is soliciting information to better understand the evolution of financial services and working to ensure appropriate regulation for national banks and federal savings associations in the context of innovative technology. We believe that there is tremendous potential for blockchain to facilitate responsible innovation in the banking industry and share the OCC's core value that safety should remain at the center of regulation and rulemaking.

Introducing R3

R3 is an enterprise blockchain software firm working with a broad ecosystem of partners across multiple industries from both private and public sectors to develop on Corda, its open-source blockchain platform, and Corda Enterprise, a commercial version of Corda. Based in New York City, R3's global team of over 300 professionals in 14 countries is supported by over 2,000 technology, financial, and legal experts drawn from its global member base.

Integral parts of R3's ecosystem are governments and regulators, who are key to our approach to innovation. We engage with the public sector at all levels, having met with well over 200 globally to date. Such engagement has allowed for the incorporation of key regulatory requirements into the design of Corda and facilitated public sector work on Corda as well.

R3's Corda Platform

We have been developing Corda significantly over the past several years and went to market with our first version of Corda Enterprise in July 2018. As an enterprise-grade blockchain platform, Corda removes costly friction in business transactions by enabling institutions to transact directly (peer-to-peer) using smart contracts, while ensuring the highest levels of privacy and security, ultimately providing value to the economy and consumers.

Originally built by the financial industry for the financial industry, Corda was developed to leverage the power of blockchain to address the specific business challenges posed by doing business in a highly regulated environment. It is now being used well beyond financial services in areas including supply chain, insurance, healthcare, trade finance, and energy. Corda records, manages and executes institutions' transactions in perfect synchrony with its peers, creating a world of frictionless commerce. As the fundamental design decision of Corda allows for limited data sharing and facilitates compliant transactions between institutions subject to reporting and data privacy regulations, this distinguishes Corda from permissionless blockchain platforms.

Comments

Q4. What types of activities related to cryptocurrencies or cryptoassets are financial services companies or bank customers engaged? To what extent does customer engagement in crypto-related activities impact banks and the banking industry? What are the barriers or obstacles, if any, to further adoption of crypto-related activities in the banking industry? Are there specific activities that should be addressed in regulatory guidance, including regulations?



In today's increasingly digital landscape, cryptoassets, or digital assets, are set to play a vital role. By transforming the way in which business is conducted, digital assets allow banks and financial institutions to streamline asset management and other internal processes. In countless use cases and pilot-programs digital assets have successfully reduced banking friction and transaction cost, increased liquidity, digitized rules and regulations, and improved the traceability of an asset's life cycle.

To better understand the benefit of digital assets, a deeper understanding of their function is necessary. R3's own research has shown a large market for digital assets, which we categorize in two forms:

- **Asset-backed tokens:** The digital token represents an asset that is held somewhere else, often a regulated custodian such as a bank. The token acts as a so called 'digital twin' and can be traded or exchanged freely on a blockchain with settlement finality, while the underlying asset remain in place at a custodian. Examples of asset-backed tokens are gold, real estate, and traditional debt and/or equity instruments held in custody.
- **Native-asset tokens:** The digital token does not represent an asset but is instead the asset itself. These digital assets are issued directly onto the ledger. This could be a recognizable financial asset like debt, equity, or bank deposits that represents some obligation on its issuer. Examples of native-backed tokens include security tokens, utility tokens, and platform tokens.

Digital assets should be transacted on venues with the necessary infrastructure to support their custody, trading, and settlement. Features of those venues include settlement finality, well defined governance, and strong identity, all of which are features of Corda.

Below we highlight relevant ongoing work on Corda:

- Among the leading digital asset trading platforms is SIX Digital Exchange (SDX), being built on Corda and set to launch in 2021. SDX is a fully integrated issuance, settlement and custody infrastructure for digital assets, and allows for auctions to settle in mere seconds, a marked improvement from the current standard of two days. This program, which is the world's first end-to-end platform for digital assets is powered by R3's Corda platform with regulation and oversight by FINMA.¹
- Motivated by increasing demand for digital asset technology, Nasdaq has partnered with R3 to integrate Corda with the Nasdaq Financial Framework (NFF), which supports issuance, trading, settlement, and custody services. Following this, Nasdaq launched its Market Services Platform in June 2020, which will sit atop the Corda-backed NFF and bolster the company's broader strategy to support digital asset market infrastructure operators on a 24x7x365 basis.
- SWIFT has also announced that SWIFT gpi is integrating with Corda, which means banks will no longer have to continuously message, email, or call recipient banks to confirm that a payment has been made. This creates a smoother, more efficient process, but also allows more SWIFT users to onboard with gpi.

These are just a few examples of how banks and financial institutions are exploring digital assets and blockchain to streamline traditional banking. In terms of the regulatory landscape for digital assets, R3 has long advocated for regulation to be applied consistently, regardless of the underlying

¹ The Swiss Financial Market Supervisory Authority is the Swiss government body responsible for financial regulation, including supervision of banks, insurance companies, stock exchanges, and securities dealers, as well as other financial intermediaries in Switzerland.



technology. For example, an asset meeting the definition of a security being issued on blockchain should be regulated as a security. We at R3 believe that coordination between banks, regulators, and technology companies is critical to fostering innovation while continuing to ensure safe and efficient markets.

Q5. How is distributed ledger technology used, or potentially used, in banking activities (e.g., identity verification, credit underwriting or monitoring, payments processing, trade finance, and records management)? Are there specific matters on this topic that should be clarified in regulatory guidance, including regulations?

In an increasingly digital age, R3 has seen banks transition from experimenting with blockchain technology to utilizing the technology both for their own internal processes as well as in transactions with counterparties, including KYC/AML data sharing, trade surveillance, regulatory reporting, and clearing and settlement. The potential is immense, with the securities and derivatives systems for trading, clearing, and settlement recording nearly 600 million transactions per day, valued at over \$12.6 trillion.²

Corda is designed to allow regulators to operate nodes and to access to the state of financial agreements over which a particular regulator has jurisdiction and, therefore, a need and right to see certain information about specific transactions on the ledger. Whether information is sent to a regulator node is determined by the “flow framework” of a Corda application (or “CorDapp”). These flows are designed by the authors of individual CorDapps, allowing flexibility in how information is shared for different types of financial relationships. Said differently, each regulator acting as an observer on a network can have a custom view, reflecting the applicable rules and regulations.

To increase efficiency in global trade finance, R3 partnered with fintech company TradeIX, to create the Marco Polo Network. Launched in 2017 and backed by leading banks,³ Marco Polo delivers a blockchain platform allowing participants to automate and streamline their trade and supply chain activities. Applications built on this platform provide banks and financial institutions the ability to program detailed trade provisions directly into their platform. Operating parties such as banks, insurers, and stakeholders are then able to safely exchange assets and data on a permission-based network powered by Corda.

Similarly, the Contour initiative, built on Corda, has completed global trials which included the participation of over 50 banks and corporations.⁴ Contour is a pilot-program with the aim of simulating digital Letter of Credit transactions. Whereas the paper-based Letter of Credit process traditionally requires 5-10 days to complete, Contour uses blockchain technology to reduce the time it takes to execute the process to less than 24 hours. In a survey of participants, 96% (across 27 countries on six continents) of those in the trial said Contour accelerated their Letters of Credit process, improved productivity, and reduced costs.

² Mills, David, Kathy Wang, Brendan Malone, Anjana Ravi, Jeff Marquardt, Clinton Chen, Anton Badev, Timothy Brezinski, Linda Fahy, Kimberley Liao, Vanessa Kargenian, Max Ellithorpe, Wendy Ng, and Maria Baird (2016). “Distributed ledger technology in payments, clearing, and settlement,” Finance and Economics Discussion Series 2016-095. Washington: Board of Governors of the Federal Reserve System, <https://doi.org/10.17016/FEDS.2016.095>.

³ Marco Polo is a joint undertaking with over a dozen financial institutions, including BNP Paribas, Commerzbank, ING, and Natwest.

⁴ ABN AMRO, Alfa Bank, Banco de Credito, del Peru-BCP, Banorte, Bci, China Everbright Bank Hong Kong Branch, CIB, CommerzBank Commercial Bank of Qatar, Ekman & Co AB, TH TRADING, MUFG, Natixis, National Bank of Egypt, RBI, SABB, Scylla, Standard Bank, Societe Generale, and The Saudi British Bank have participated in trials of the trade finance solution.



Another area where blockchain-based securities may directly benefit banking is through collateral management. In 2018, the total value of securities used as collateral worldwide was estimated to be approximately US \$12.2 trillion excluding cash.⁵ With increased regulation following the 2008 financial crisis, bank reserves and operational complexity has increased. While regulators require greater transparency into capital and margin, banks and financial institutions are incentivized to develop nearly instantaneously updated records to improve the efficiency of collateral management. Thus, the use of digital assets in collateral management stands to benefit both banks and their regulators.

One example of such work is a partnership between R3 and Deutsche Börse Group. Deutsche Börse, along with over 15 market participants, including CIBC, Citi, Goldman Sachs and ING, are engaged in different phases of onboarding onto the HQLA^x platform, a marketplace and servicer for high quality liquid assets. In the HQLA^x model, a digital collateral registry is used to record ownership of baskets of securities, and the holders of legal title to the securities transfer ownership to the HQLA^x digital collateral records (DCRs) while the underlying securities remain the same within DCR-linked custody accounts. This enables platform participants to execute securities lending transactions for balance sheet optimization.

Additionally, identity verification and risk assessment are two areas of banking that can benefit greatly from blockchain. As it currently stands, the unbanked (estimated 40% of the world's population⁶), the underbanked, and microenterprises struggle to establish creditworthiness. Banks could theoretically use blockchain to pool large amounts of data secured on an encrypted ledger. This would allow for a better informed, efficient credit validation process. Using biometric features such as fingerprint or facial recognition features, pilot programs such as CULedger (built upon R3's Corda) have reduced identity verification times to a matter of seconds. Although implementation of this technology would require substantial customer engagement, it has the potential to be well-received by both banks and customers alike.

Q7. What new payments technologies and processes should the OCC be aware of and what are the potential implications of these technologies and processes for the banking industry? How are new payments technologies and processes facilitated or hindered by existing regulatory frameworks?

Across the world, market economies such as China and Sweden are experimenting with the idea of a central bank digital currency (CBDC). The declining use of cash payments in favor of credit and debit card transactions has been well documented for many years and is commonly cited as a key incentive for a CBDC. Historically, physical central bank money (cash) has been the most widely accessible medium of spending. However, as cash usage declines, the possibility of its disappearance threatens the public's access to central bank money. Since the traditional approach has served the public and the financial system well for many years, the bar for changing the current monetary and financial structure is understandably high. In R3's conversations with regulators and industry leaders, there is a growing eagerness to streamline banking protocol and reduce friction within the financial services industry. As other countries begin to undertake a CBDC, such as the Riksbank's digital 'e-krona' (being built on R3's Corda platform), the United States should further explore the

⁵ Accenture, *Unlocking Infinite Value* 2018 (currency exchange rate of 1 Euro equals 1.22 dollars as on March 1, 2018)

⁶ Higginson, Matt, Hilal, Atakan, and Yugac, Erman (2019). "Blockchain and Retail Banking: Making the Connection," McKinsey & Company. <https://www.mckinsey.com/industries/financial-services/our-insights/blockchain-and-retail-banking-making-the-connection>



benefits of CBDC. If implemented properly, a CBDC would allow the United States to ‘futureproof’ the dollar and preserve its role as a reserve currency for years to come.

We at R3 believe that effective implementation of retail CBDC would result in a more resilient payment landscape by delivering an additional payment rail to operate alongside traditional bank transfers, credit card transactions, and physical cash payments. In addition, a CBDC built upon a permissioned blockchain would allow this rail to perform real time transfers with settlement finality. Scalability is a necessity for such a solution, however, and should be prioritized. By facilitating the atomic transference of payment through blockchain, a number of payment processes would be improved. There would be an immediate reduction in cost for value transfers (e.g., elimination of transaction fees) and the operational costs associated with failures to deliver. Within our own Corda user-base, companies like SWIFT and Mastercard are not only making significant progress in improving payment services but are doing so by paying special attention to the underlying technology on which these payment services are built. With nearly instant settlement, banks would experience a reduction in counterparty risk, thus reducing hedging costs and capital charges.

These are only a few examples of how blockchain can decongest longstanding banking processes. As blockchain is still a relatively young technology, the potential for financial growth and productivity will continue to develop. With that said, many banks have already conducted pilot-programs, experienced success, and are moving toward the production of innovative solutions that benefit their customers and the market.

Q8. What new or innovative tools do financial services companies use to comply with applicable regulations and supervisory expectations (i.e., “regtech”)? How does the OCC’s regulatory approach enable or hinder advancements in this area?

“Regtech” does not refer to one particular technology or approach, but rather signifies the overall effort to moderate the regulatory burden felt by banks and financial institutions by using technology to enhance regulatory processes. In doing so, banks employ a host of technologies such as blockchain, AI, and biometrics. As banks begin to experiment with these technologies, their coordination with regulatory agencies will be crucial. The Juniper Institute estimates that Regtech spending will exceed \$127 billion by 2024.⁷ The study highlights AI and blockchain’s ability to create an automated, transparent ledger of KYC checks and transaction history as the primary incentive for investment.

Today, KYC compliance is a highly repetitive process that often results in data inconsistency and duplication. Banks also face the task of needing to use separate internal and external trackers, resulting in manual attempts to bridge operational procedures. Similarly, AML compliance involves extensive documentation validation, as well as proof of identity. These outdated processes are both inefficient and prone to error, and are highly cumbersome elements of banking that would benefit greatly from automation. Blockchain offers the opportunity to streamline these processes. As banks incorporate Fintech solutions to comply with regulatory requirements, it is important that regulators remain abreast of the developments in emerging technologies.

However, not all blockchain platforms are created equal. In the case of financial oversight, it is clear that a permission-based system, such as R3’s Corda, would be optimal for KYC and AML compliance. As Corda is a permissioned blockchain, it allows corporate customers to create and manage their own identities and grants participants specific access to data. Supervisory nodes, or observer nodes

⁷ <https://www.juniperresearch.com/document-library/white-papers/opportunities-for-ai-in-regtech-whitepaper>



as they are referred to on Corda, create the potential for transacting parties to share data with a third party who may have a legal, business, or regulatory interest in the information. On Corda, this means transactions remain frictionless through peer-to-peer transaction, but entities such as regulators have access to timely and accurate information that they have a need and a right to see in the markets they supervise. This reduces duplication costs by eliminating the need for each institution to individually attest and update KYC records. In addition, Corda's peer-to-peer approach to data sharing, whereby only those who have a need and right to see data may do so, addresses concerns around data privacy and security that may arise when sharing identity data.

Q10. What other changes to the development and delivery of banking products and services for consumers, businesses and communities should the OCC be aware of and consider?

It is important that the OCC is aware of smart contracts and the way in which they are used to facilitate transactions. Through the use of smart contracts, banks can greatly reduce fraud, shorten transaction periods, and simplify KYC/AML protocol. Simply put, a smart contract is computer code intended to digitally facilitate the direct negotiation, or record and effectuate contractual terms between clients when specific conditions are met. Smart contracts remove the need for a third-party validator by utilizing the network-approved dataset, thus enabling smart contract information to be verified and executed automatically.

As we delve further into a digitized age, it is the responsibility of banks and institutions to remain dedicated to transparency, trust, privacy, and security, all of which can be served with blockchain technology. The streamlining of these processes not only benefits banking institutions, but affords consumers, businesses, and communities the means to operate in a safe and efficient manner.

In the same way that the internet advanced with immediacy and enthusiasm – unwitting of its full potential – so too must we consider the application of blockchain. In conversation with industry leaders and market participants, there is a growing appetite for blockchain. In the past year alone, Fintech companies have acquired \$135.7 billion globally in investments.⁸ The World Economic Forum described blockchain saying, “Rather than stay at the margins of the finance industry, blockchain will become the beating heart of it.” It is time for the banking community to adopt this technology and allow the “beating heart” of finance to flourish.

Working With You

R3 has and will continue to be an active partner to US national banks in their efforts to innovate with and for their customers. We hope our response assists the OCC and would be delighted to discuss any of the points raised in the notice or our response.

Please do not hesitate to contact me.

Sincerely,

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⁸ KPMG, *Pulse of Fintech 2019, Global Analysis of Investment in Fintech 2019*